

EPO - DG 1

21.09.2001

## Amended claims

(105)

1. A vaccine or medical preparation comprising a protease maturation protein of *S. pneumoniae* comprising an amino acid sequence as shown in fig 1B, and/or a fragment thereof and/or a homologous and/or a functionally homologous protein or protein fragment thereof for the treatment of microbial infections.
2. The vaccine or medical preparation according to claim 1 for the treatment of *S. pneumoniae*.
3. The vaccine or medical preparation according to claim 1 or 2, further comprising a suitable adjuvant or carrier.
4. The vaccine or medical preparation according to anyone of the claims 1-3 wherein said protein is the protein maturation protein from *S. pneumoniae* Ft231 or EF3296.
5. The vaccine or medical preparation according to anyone of the claims 1-4 wherein said fragment comprises an anchoring fragment, an antigenic fragment or a functional equivalent thereof or a functional equivalent of a receptor binding site or an antibody binding site.
6. The vaccine or medical preparation according to anyone of the claims 1-5 wherein said protein or said fragment comprises a purified, recombinant or synthetic protein or fragment thereof.
7. The vaccine or medical preparation according to anyone of the claims 1-6 wherein said fragment comprises at least 8 amino acids.
8. Method for the preparation of a vaccine against *S. pneumoniae* comprising the steps of:
- a. isolating a protease maturation protein of *S. pneumoniae* comprising an amino acid sequence as shown in fig 1B, or a fragment thereof or a recombinant or synthetic protein or fragment thereof or homologous or functionally homologous protein or fragment thereof; and
- b. combining the protein or the fragment thereof obtained under (a) with a suitable carrier or adjuvant.

9. Method for obtaining an antibody against the protease maturation protein of *S. pneumoniae*, the method comprising the steps of isolating protease maturation protein comprising an amino acid sequence as shown in fig 1B or a fragment thereof and/or a homologous and/or a functionally homologous protein or protein fragment thereof, and
- 5 raising antibodies against said protein or fragment thereof.
10. Antibody comprising opsonophagocytic activity obtainable by the method according to claim 9.
11. Use of a protease maturation protein of *S. pneumoniae* comprising an amino acid sequence as shown in fig 1B, or a fragment thereof and/or a homologous and/or a
- 10 functionally homologous protein or protein fragment thereof, for the preparation of a vaccine for the treatment or prophylaxis of a *S. pneumoniae* infection.
12. Use of a protease maturation protein of *S. pneumoniae* comprising an amino acid sequence as shown in fig 1B, or a fragment thereof or a recombinant or synthetic protein or fragment thereof as a carrier.
13. Method of treatment of a *S. pneumoniae* infection comprising administering a vaccine according to claims 1-7.
14. Method for the vaccination of a mammal against an infection of *S. pneumoniae* comprising administering a suitable dose of a vaccine according to anyone of the claims 1-7.
15. Use of a nucleic acid sequence coding for a protease maturation protein comprising an amino acid sequence as shown in fig 1B, or a fragment thereof and/or a homologous and/or a functionally homologous protein or protein fragment thereof, for obtaining a recombinant protease maturation protein or fragment thereof.
16. Cell containing a recombinant nucleic acid sequence or a vector encoding for
- 25 protease maturation protein comprising an amino acid sequence as shown in fig 1B, or a fragment thereof and/or a homologous and/or a functionally homologous protein or protein fragment thereof.
17. Recombinant protease maturation protein comprising an amino acid sequence as shown in fig 1B, or fragment thereof and/or a homologous and/or a functionally
- 30 homologous protein or protein fragment thereof, obtainable through the expression of a gene sequence encoding for said protein in a suitable vector.
18. Use of protease maturation protein of *S. pneumoniae* comprising an amino acid sequence as shown in fig 1B, and/or a fragment thereof and/or a homologous and/or a

3

functionally homologous protein or protein fragment thereof for the preparation of a medicament for the treatment of diseases connected with *S. pneumoniae* infections.

19. Use of protease maturation protein of *S. pneumoniae* comprising an amino acid sequence as shown in fig 1B, and/or a fragment thereof and/or a homologous and/or a functionally homologous protein or protein fragment thereof for eliciting opsonophagocytic activity and/or in vivo immunisation and/or in vivo immune protection against *S. pneumoniae*.

10

15